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20 Oct

**CENTRAL INTELLIGENCE AGENCY
CODEWORD ROUTING SHEET**

TO		INITIALS	DATE
1	Ch/D/MS	<i>Sm</i>	19 Oct 64
2	Ch/St/P/C 25X1		
3	Attn: 		
4	SA/RR		
5			
6			
FROM		INITIALS	DATE
1	Ch/MS/EE	<i>SP</i>	19 Oct
2			
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<input type="checkbox"/> Approval	<input type="checkbox"/> Information	<input type="checkbox"/> Signature
<input type="checkbox"/> Action	<input type="checkbox"/> Direct Reply	<input type="checkbox"/> Return
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<input type="checkbox"/> Concurrence	<input type="checkbox"/> Recommendation	<input type="checkbox"/> File

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APPENDED DOCUMENT CONTAINS CODEWORD MATERIAL

Appended document contains classified information within
the meaning of Section 798, Title 18, United States Code.

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SC No. 11110/64

20 OCT 1964

MEMORANDUM NO: 6360-S

MEMORANDUM FOR: [REDACTED]

SUBJECT: Reply to [REDACTED] Request for Information on
Soviet Production of High Gain-Bandwidth Tubes

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1. By the time this reaches you, [REDACTED] will probably have already been briefed by [REDACTED] on this matter. [REDACTED] was in Washington a few weeks ago, and this point was discussed with him.

2. The CIB article to which your letter refers was based on a joint ORR/OSI examination of reports of large Swedish exports to the USSR of 5 and 8 micron gold-plated tungsten wire. Total orders for the past twelve months come to a little more than ten million meters. US industry sources, including producers of the tungsten wire and electron tubes, know of no alternative use of this type wire except in grid structures for low noise and high G-BW tubes. Furthermore, there is a body of Soviet literature devoted to the technology of production of these tubes utilizing 5 and 8 micron gold-plated tungsten wire. In this family the 6Zh9P is the earliest tube produced in the USSR, but an examination by the US National Bureau of Standards indicates that the sample 6Zh9P available here used 10 micron wire. Other Soviet tubes which, according to Soviet specifications, probably use 5 and 8 micron wire include the following: 6Zh11P, 6Zh23P, 6E5P, 6V1P, 6Zh20P, 6Zh21P, 6Zh22P, 6S3P, 6S17K, and 6S15P. [REDACTED] will have the specifications for these tubes readily available to him [REDACTED]

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3. We, of course, cannot be sure of the product mix of tubes to be produced from this wire, but the presence of 5 micron wire in the order indicates, based on Soviet texts relating tube dimensions to performance, that 200,000 or more tubes of the highest quality could be manufactured. We have real trouble imputing any particular use for this quantity of tubes because it seems so far in excess of requirements. The remaining several million tubes which can be produced from the 8 micron wire is similarly well above what we would have believed to have been a present Soviet requirement. An advanced radar designed to employ greater signal bandwidths for improved resolution and precise tracking of aircraft, missiles and satellites, appears to be a strong possibility. In the US, radar systems are going to increased signal bandwidths for these purposes.

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SUBJECT: Reply to [] Request for Information on Soviet
Production of High Gain-Bandwidth Tubes

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4. Another development of possible interest to [] is the recent Soviet purchase from Japan of 33 automatic semiconductor slicing machines. These machines slice germanium at the rate of about two slices per minute and silicon at the rate of about one slice per minute and a half, with standard size crystals (1 to 1½ inches diameter). Our computations, based on US experience of several years ago, indicates that when these machines are installed in a full production cycle and fully utilized, they will support a production volume of several hundred million devices per year. This is based on what we believe is a conservative expectation of 100 chips per slice of germanium or silicon with an average 30 percent yield of good devices. Mr. [] comments on the above would be most welcome.

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[]

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